ABSTRACT

The present invention relates generally to warning lights, and more specifically, to solid-state (LED) warning lights whose operation is modulated in response to environmental conditions, generally under the supervision of a microprocessor or dedicated control circuit. LEDs are used in warning lights, but not in an effective way. Typically, the LED driving circuits are electrically inefficient and in some cases, there is an attempt to minimize the power that is supplied to the LEDs. The invention employs environmental sensors which allow the operation of the LEDs to be optimized; for example: LED intensity can be increased in response to poor ambient visibility, duty cycle can be decreased in response to a lack of power, and the LEDs can be de-rated in response to high temperature conditions. Many other advantages of the invention are described, including the use of light control film, buck boost and buck down driver circuits, external communication circuits and microprocessor control.